

REMARKS

The Office Action of July 22, 2008, has been carefully considered.

Objection continues to be raised to the specification on the basis that on page 8, reference numerals 16 and 18 are both listed as describing tangential fibers. The specification has now been corrected so that reference numeral 18 is the only numeral used to describe tangential fibers.

In addition, page 12 has been amended so that figures referred to are Figures 5 and 6 rather than Figures 4 and 5.

Claim 45 has been rejected under 35 USC 112, second paragraph, on the basis that the term "central opening" is unclear. This claim has now been amended to recite that the preform comprises a central opening and the reinforcing fibers extend in a layer tangentially with respect to the central opening. This is the arrangement which is described at the top of page 6 of the specification.

Withdrawal of this rejection is requested.

Claims 30, 31, 33-37, 39-41, 47, 51, 53-56 and 58 have been rejected under 35 USC 103(a) over Duval et al in view of Mattheij et al.

Claim 30 is directed to a tribological fiber composite component comprising a preform having a base layer and stressable reinforcing fibers which are stitched onto the base layer with polymer fibers using tailored fiber placement (TFP). The preform is stabilized by means of deposition and pyrolysis.

The presence of the base layer is mandatory for having the reinforcing fibers stitched thereon. This results in an advantage in that the reinforcing fibers in terms of type, length, number and direction can be stitched individually onto the base layer in order to meet the requirements for the tribological component. Different regions can thereby be formed on a base layer.

Duval et al teaches that layers of felt can be used for the production of a tribological component, the felt layers being interconnected by means of needling. Needling is a well known method in the art, as noted by Duval et al at column 1, lines 54 and 63 and column 2, line 9. Duval et al uses this same method; see column 2, lines 53, 66 and 67, for example.

According to the method of Duval et al, a carbon-carbon composite part is made by forming a three-dimensional fiber structure, compressing the fiber structure to obtain a fiber preform, and densifying the preform. The three-dimensional fiber structure is formed by superposing layers of felt and bonding them together by needling.

It is apparently the position of the Office action that it would have been obvious to one of ordinary skill in the art to replace one of the felt layers with a base layer (or simply define one felt layer as a base layer), and to replace the needling with TFP. Applicants disagree. There is absolutely no suggestion why one of ordinary skill in the art would replace needling with TFP.

Moreover, the result of the claimed method is *structurally* different from the result of the method of Duval et al. TFP works essentially in a two-dimensional manner at the interface of the base layer and the reinforcing fibers, so that the reinforcing fiber structure is not disturbed, and a connection does not exist among the various layers. In contrast, needling is a three-dimensional method in which all layers are connected together and the structure of each layer is affected by the attachment.

It is noted moreover that Claim 30 has been amended to recite that the layers are stitched together by TFP using *polymer fibers*, a recitation previously found in Claim 47 which has been canceled. No such polymer fibers are disclosed or suggested by Duval et al in which needling is the sole means of attachment. It is pointed out that the polymer

fibers exist for fixation only and are eventually pyrolyzed.

Thus, the claimed invention is distinguished from Duval et al in that it utilizes a base layer, stressable reinforcing fibers which are stitched to the base layer using TFP, and the use of polymer fibers for stitching. Moreover, as recited in Claim 36, the fiber composite component can additionally comprise at least one of a layer, a fabric, short fibers, a felt and a fleece.

The mere indication that TFP is a known attachment method from Mattheij et al does not suggest the advantages of replacing the needling of Duval et al with stitching by TFP to a base layer, which is in itself not at all disclosed or suggested by Duval et al. Duval et al teaches exclusively using multiple layers of felt, not a base layer and a reinforcing layer, and provides absolutely no suggestion of the teaching of the invention.

There is also no suggestion of obtaining the fiber composite component recited in Claims 53 and 54, since Duval et al provides neither a brake with two preforms which are connected to one another by webs formed from reinforcing fibers or a preform having a thickening formed by reinforcing fibers in the area of a force input point. Rather, Duval et al teaches the opposite, explaining in connection with Figure 2 that thickenings are basically undesired. In column 5, lines 12-13, Duval et states "[...]so that it can be wound flat without giving rise to significant extra thickness at the inside circumference of the structure."

Withdrawal of this rejection is requested.

In addition, Claim 32 has been rejected under 35 USC 103(a) over Duval et al in view of Mattheij et al and further in view of Dietrich et al, Claim 38 has been rejected under 35 USC 103(a) over Duval et al in view of Mattheij et al and further in view of Hecht, Claims 42-46, 49, 50, 52 and 57 have been rejected under 35 USC 103(a) over Duval et al in view of

Mattheij et al and further in view of Bilisik and Claim 48 has been rejected under 35 USC 103(a) over Duval et al in view of Mattheij et al and further in view of Berger.

The Duval et al and Mattheij et al have been discussed in detail above, and Applicants rely on that discussion.

Dietrich et al has been cited to show a fiber reinforced composite ceramic comprising high temperature resistant fibers which are reaction bonded to a matrix based on Si. Dietrich et al does not, however, cure the defects of the Duval et al and Mattheij et al references.

Hecht has been cited to show fiber composites intended for use in applications where severe sheer stresses will be encountered, and teaches that webs which are composed of random filaments take the form of thin felts and papers with low volt densities. Hecht also does not cure the defects of the Duval et al and Mattheij et al references.

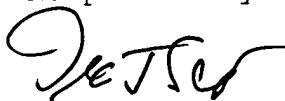
Bilisik relates to multiaxial three-dimensional circular woven fabrics, but does not disclose tribological components. Neither a base layer nor reinforcing fibers stitched thereon are provided.

Berger relates to a segmented friction disk for brakes or clutches, but is not otherwise related to the claimed invention.

Withdrawal of these rejections is requested.

In view of the foregoing amendments and remarks, Applicants submit that the present application is now in condition for allowance. An early allowance of the application with amended claims is earnestly solicited.

Respectfully submitted,



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